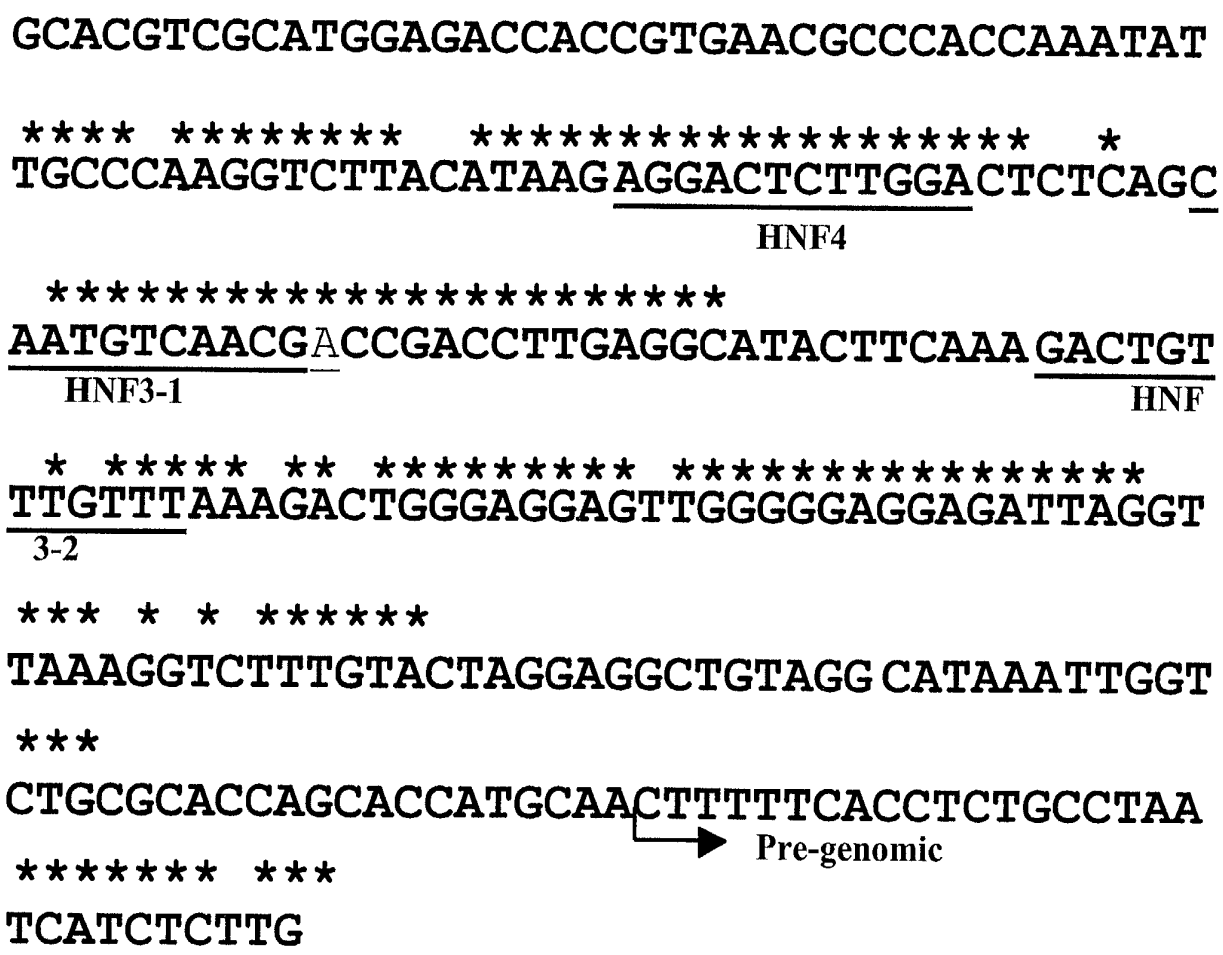


* nucleotide conserved at >95% among 75 HBV strains

Fig. 1A

2701 TTATTATCCAGAACATCTA**GTTAATCATTACT**TCCAAACTAGA**CACTATTTACAC**ACTCT
HNF1 HNF3

2761 ATGG**AAGGCGGGTA**TAT**TATATAA**GAGAGAAACAACACATAGCGCCTC**A**TTTTGTGGGTC
Sp1 TBP RNA Start

2821 ACCATATTCTTGGGAACAAGATCTACAGC**ATG**GGGC
PreS1 protein start

Fig. 1B

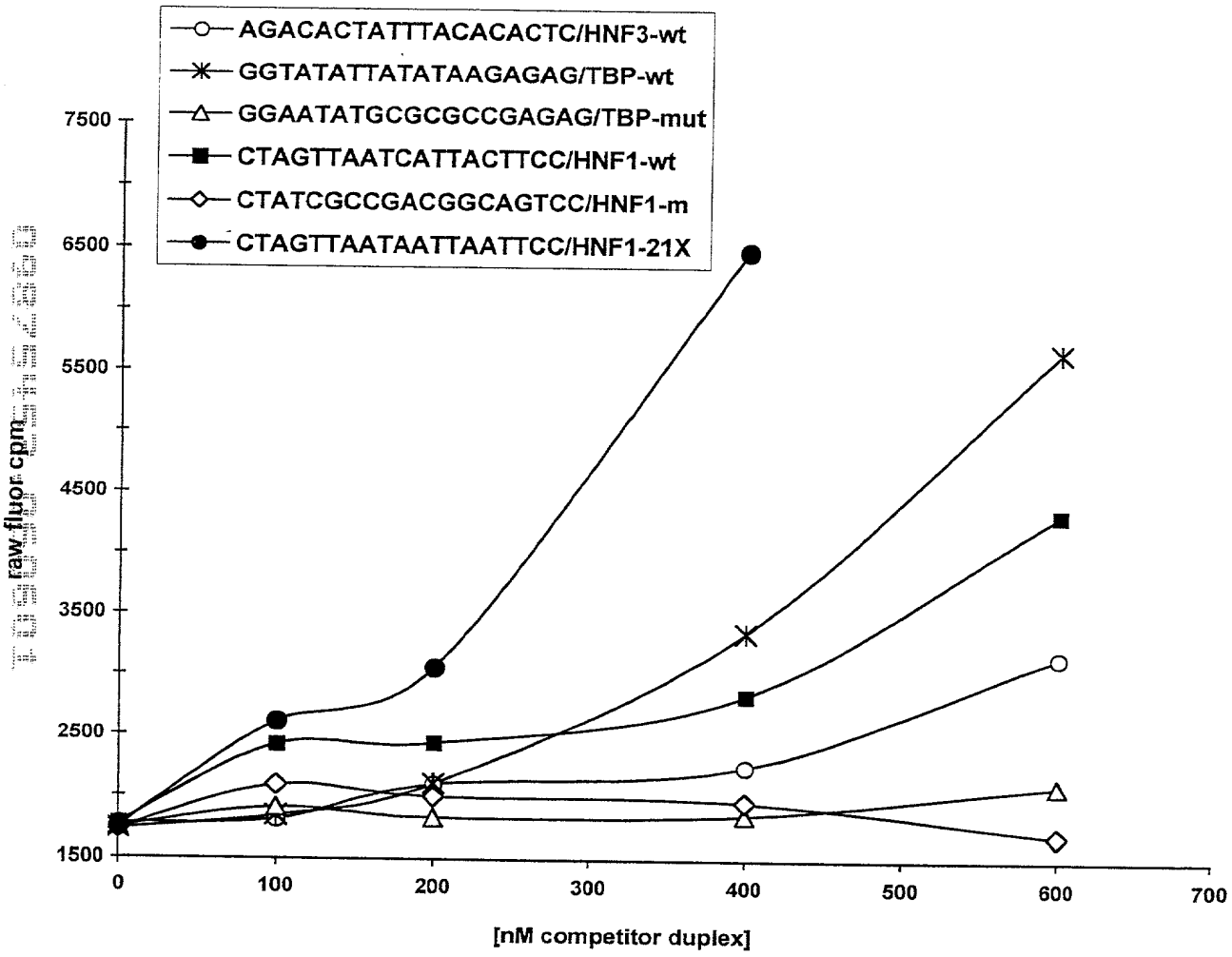

AGACACTATTTACACACTC/HNF3-wt
GGTATATTATATAAGAGAG/TBP-wt
GGAATATGCGCGCCGAGAG/TBP-mut
CTAGTTAATCATTACTTCC/HNF1-wt
CTATCGCCGACGGCAGTCC/HNF1-m
CTAGTTAATAATTAATTCC/HNF1-21X
7500
6500
5500
4500
3500
2500
1500
raw fluor cpm
0
100
200
300
400
500
600
700
[nM competitor duplex]

Fig. 2

1081 CTA AGC AGG CTT TCA CTT TCT CGC CAA CTT ACA AGG CCT TTC TGT GTA AAC AAT
NF1(1100-1119)
2c (1119-1134)

1135 ACC TGA ACC TTT ACC CCG TTG CCC GGC AAC GGC CAG GTC TGT GCC AAG TGT TTG
EF-C(1148-1168)

1189 CTG ACG CAA CCC CCA CTG GCT GGG GCT TGG TCA TGG GCC ATC AGC GCA TGC GTG
E(1180-1202) NF1(1209-1236) X-PBP(1229-1245)

1243 GAA CCT TTT CGG CTC CTC TGC CGA TCC ATA CTG CGG AAC TCC TAG CCG CTT GTT

1297 TTG CTC GCA GCA GGT CTG GAG CAA ACA TTA TCG GGA CTG ATA ACT CTG TTG TCC

1351 TAT CCC GCA AAT ATA CAT CGT TTC CAT GGC TGC TAG 1386

Fig. 3

```
                CAGCTGGG CCGCCCTTGT GCGCGGGCTG ATGCTCTGAG GCTTGGCTAT
GCGGGGGCCA ACGCGATTGT GGGTGCTCGG GGAGTGGGGG GGGGCACGAC CGTAGGTGCT
CCCTGCTGGG GCAACCCATC GCTCCCCATG CGGAATCCGG GGGTAATTAC CCCCCCAGGA
CCCGGAATAT TAGTAATCCT AATTCCCGGC GGGGGAGGGG GCGCGGGAGG AATTCACCCT
GAAAGGTGGG GGTGGGGGGG GTCGCATCTT GCTGTGAGCA CCCTGGCGAA GGGGAGAGGG
CTTTTTCTAT CAGTTTTCTT TGAGCTTTTA CTGTTAAGAG GGTACGGTGG TTTGATGACA
CTGAACTATA TTCAAAAGGA AGTAAATGAA CAGTTTTCTT AATTTGGGGC AGGTACTGTA
AAAATAAAAA CAAAAGTTAA GACAGTAAAA TGTCCTTTTA TTTTTTAATG CACCAAAGAG
ACAGAACCTG TAATTTTAAA AACTGTGTAT TTTAATTTAC ATCTGCTTAA GTTTGCGATA
ATATTGGGGA CCCTCTCATG TAACCACGAA CACCTATCGA TTTTGCTAAA AATCAGATCA
GTACACTCGT TTGTTTAATT GATAATTGTT CTGAATTATG CCGGCTCCTG CCAGCCCCCT
CACGCTCACG AATTCAGTCC CAGGGCAAAT TCTAAAGGTG AAGGGACGTC TACACCCCCA
ACAAAACCAA TTAGGAACTT CGGTGGTCTT GTCCCAGGCA GAGGGGACTA ATATTTCCAG
CAATTTAATT TCTTTTTTAA TTAAAAAAAA TGAGTCAGAA TGGAGATCAC TGTTTCTCAG
CTTTCCATTC AGAGGTGTGT TTCTCCCGGT TAAATTGCCG GCACGGGAAG GGAGGGGGTG
CAGTTGGGGA CCCCCGCAAG GACCGACTGG TCAAGGTAGG AAGGCAGCCC GAAGAGTCTC
CAGGCTAGAA GGACAAGATG AAGGAAATGC TGGCCACCAT CTTGGGCTGC TGCTGGAATT
TTCGGGCATT TATTTTATTT TATTTTTTGA GCGAGCGCAT GCTAAGCTGA AATCCCTTTA
ACTTTTAGGG TTACCCCCTT GGGCATTTGC AACGACGCCC CTGTGCGCCG GAATGAAACT
TGCACAGGGG TTGTGTGCCC GGTCCTCCCC GTCCTTGCAT GCTAAATTAG TTCTTGCAAT
TTACACGTGT TAATGAAAAT GAAAGAAGAT GCAGTCGCTG AGATTCTTTG GCCGTCTGTC
CGCCCGTGGG TGCCCTCGTG GCGTTCTTGG AAATGCGCCC ATTCTGCCGG CTTGGATATG
GGGTGTCGCC GCGCCCCAGT CACCCCTTCT CGTGGTCTCC CCAGGCTGCG TGCTGTGCCG
GCCTTCCTAG TTGTCCCCTA CTGCAGAGCC ACCTCCACCT CACCCCCTAA ATCCCGGGGG
ACCCACTCGA GGCGGACGGG GCCCCCTGCA CCCCTCTTCC CTGGCGGGGA GAAAGGCTGC
AGCGGGGCGA TTTGCATTTC TATGAAAACC GGACTACAGG GGCAACTCCG CCGCAGGGCA
GGCGCGGCGC CTCAGGGATG GCTTTTGGGC TCTGCCCCTC GCTGCTCCCG GCGTTTGGCG
CCCGCGCCCC CTCCCCCTGC GCCCGCCCCC GCCCCCCTCC CGCTCCCATT CTCTGCCGGG
CTTTGATCTT TGCTTAACAA CAGTAACGTC ACACGGACTA CAGGGGAGTT TTGTTGAAGT
TGCAAAGTCC TGGAGCCTCC AGAGGGCTGT CGGCGCAGTA GCAGCGAGCA GCAGAGTCCG
CACGCTCCGG CGAGGGGCAG AAGAGCGCGA GGGAGCGCGG GGCAGCAGAA GCGAGAGCCG
AGCGCGGACC CAGCCAGGAC CCACAGCCCT CCCCAGCTGC CCAGGAAGAG CCCCA
```

Fig. 4

```
        10         20         30         40         50         60         70
GAATTCACTG GGGAGAGCAT TCAGGAAGAT GACAACAGGA TAATAGGTCA ACAGAGTAAT AGAGAGGTCG
CTTAAGTGAC CCCTCTCGTA AGTCCTTCTA CTGTTGTCCT ATTATCCAGT TGTCTCATTA TCTCTCCAGC

        80         90        100        110        120        130        140
CTAAAAATAA ACTCTAAGAA GTATTCAGCC AAAACTATTA TTGAGCTAAT AATGGTGGGA TCAATTTCAG
GATTTTTATT TGAGATTCTT CATAAGTCGG TTTTGATAAT AACTCGATTA TTACCACCCT AGTTAAAGTC

       150        160        170        180        190        200        210
GGGAATATTG TGGGCAGAAG TCAGACTGTA GGAGGCTGGG GATCAAGAAG TTGAGGCAAG GAGGTTGGAC
CCCTTATAAC ACCCGTCTTC AGTCTGACAT CCTCCGACCC CTAGTTCTTC AACTCCGTTC CTCCAACCTG

       220        230        240        250        260        270        280
AACAACTGTT TTTTCAAGTT GGTCACGTGA ACAAATCTGT GACCTTCAGC CTCCCCTCCC TCGGGTCTTG
TTGTTGACAA AAAAGTTCAA CCAGTGCACT TGTTTAGACA CTGGAAGTCG GAGGGGAGGG AGCCCAGAAC

       290        300        310        320        330        340        350
GCTGAGCTGA TTGCAGGGCC CCTGCAGCTC TGGCACTCTC AAGTTGTATA AAACTGACAG TGCAGAAGTC
CGACTCGACT AACGTCCCGG GGACGTCGAG ACCGTGAGAG TTCAACATAT TTTGACTGTC ACGTCTTCAG

       360        370        380        390        400        410        420
CTTGAGCCCA TTTTGGCTCT CATGATAATT TTCCTTCAGT GGAACTAAGG TTACTTGTCT AAGAACCAAA
GAACTCGGGT AAAACCGAGA GTACTATTAA AAGGAAGTCA CCTTGATTCC AATGAACAGA TTCTTGGTTT

       430        440        450        460        470        480        490
GCCTCTGACT TGACTGATCA AAGTTCATCA CGTGCATCGA AGCCACCTAC TTGGCAGATG TAGTGAAAAG
CGGAGACTGA ACTGACTAGT TTCAAGTAGT GCACGTAGCT TCGGTGGATG AACCGTCTAC ATCACTTTTC

       500        510        520        530        540        550        560
CTACATAGAT CTGGGCCCAG GACAGGATGC TGGGGCGTGG GAGGGGAAGA AAGCAGGTGC TAACTATATA
GATGTATCTA GACCCGGGTC CTGTCCTACG ACCCCGCACC CTCCCCTTCT TTCGTCCACG ATTGATATAT

       570        580        590        600        610        620        630
GATAGCATGC CTATCAGAGC AGTTTTTACG TTTCCTATTT GTCTCTCAAA ACAATTTTAT AGGAATCATC
CTATCGTACG GATAGTCTCG TCAAAAATGC AAAGGATAAA CAGAGAGTTT TGTTAAAATA TCCTTAGTAG

       640        650        660        670        680        690        700
AAAGCAATTT TATCATGGTT TCTAGACCAG GTTTGGATGT GAGGTAGGGA TTTCCACAGC TGCTTTTAGT
TTTCGTTAAA ATAGTACCAA AGATCTGGTC CAAACCTACA CTCCATCCCT AAAGGTGTCG ACGAAAATCA

       710        720        730        740        750        760        770
TTGAAGGAAA TCTGATAAGA TGATGCAAAA GCCCTTCAGA AATGTGTAAT CCTACACACT TCAGTGATTC
AACTTCCTTT AGACTATTCT ACTACGTTTT CGGGAAGTCT TTACACATTA GGATGTGTGA AGTCACTAAG

       780        790        800        810        820        830        840
AATTCATTGT CAAAACTTAA GGTGTTTTTA ATATTGTTAT TGTTCATTTG GTTTTTACCA ACATGTAAGG
TTAAGTAACA GTTTTGAATT CCACAAAAAT TATAACAATA ACAAGTAAAC CAAAAATGGT TGTACATTCC

       850        860        870        880        890        900        910
AGTTGGCAAT TATTTGTTAA ACTCATGTCT TAGGCTAAAT AAATTCCAAA AAATTCAGGA TGAGAATTGT
TCAACCGTTA ATAAACAATT TGAGTACAGA ATCCGATTTA TTTAAGGTTT TTTAAGTCCT ACTCTTAACA
```

Fig. 5A

```
       920        930        940        950        960        970        980
TTATTGCTTA ACGTGTGTCA AATTTCTTCC ATGCACATCT TTATTAGATC TTCACAGCAA CCTACAGGAT
AATAACGAAT TGCACACAGT TTAAAGAAGG TACGTGTAGA AATAATCTAG AAGTGTCGTT GGATGTCCTA

       990       1000       1010       1020       1030       1040       1050
AAGCAAGACA GGTGCAAGTG CCTCCTTTGG GTATGAGGAA ACTGAGGTCT AAAGAGATGA AGTGATTTGC
TTCGTTCTGT CCACGTTCAC GGAGGAAACC CATACTCCTT TGACTCCAGA TTTCTCTACT TCACTAAACG

      1060       1070       1080       1090       1100       1110       1120
CCAAGGCTCA TAGCAATTTA TTGGTAGAGC AAAGACTAGA ATTCTCTTAA CTGCAGCCTA TTTTCCCTAT
GGTTCCGAGT ATCGTTAAAT AACCATCTCG TTTCTGATCT TAAGAGAATT GACGTCGGAT AAAAGGGATA

      1130       1140       1150       1160       1170       1180       1190
TCTGAACTGT TACATCAGCA TCAACAATTA TCTAATGGAT TGGAACAGTG TACACAGGCA GCTTAGCTAC
AGACTTGACA ATGTAGTCGT AGTTGTTAAT AGATTACCTA ACCTTGTCAC ATGTGTCCGT CGAATCGATG

      1200       1210       1220       1230       1240       1250       1260
GTCAAGTCAC GATTTTTACT TTAACTTCAA TTCCAGAGTC TTGGCCTGAT TTCCCTCAAG ACCCTACTTA
CAGTTCAGTG CTAAAAATGA AATTGAAGTT AAGGTCTCAG AACCGGACTA AAGGGAGTTC TGGGATGAAT

      1270       1280       1290       1300       1310       1320       1330
TCTTTGGCTT TGGAAAATTT ATTTTTCTTG CATTATCTTT CCAGCTAAAT TTTATTTAAT AACCATCAGC
AGAAACCGAA ACCTTTTAAA TAAAAAGAAC GTAATAGAAA GGTCGATTTA AAATAAATTA TTGGTAGTCG

      1340       1350       1360       1370       1380       1390       1400
ATGCTTTTTT TGCTTTATGC CATGTAGACT TGACCTGAAA ACCTGCCAGG CTTTCATTGA GTTTAGTGAT
TACGAAAAAA ACGAAATACG GTACATCTGA ACTGGACTTT TGGACGGTCC GAAAGTAACT CAAATCACTA

      1410       1420       1430       1440       1450       1460       1470
TAAAGAAGTA AAGTTCTGAG AAGCAATTAG TTGATGGGAC ACCAGTCATA AAATCAATCC AAACTTTTGT
ATTTCTTCAT TTCAAGACTC TTCGTTAATC AACTACCCTG TGGTCAGTAT TTTAGTTAGG TTTGAAAACA

      1480       1490       1500       1510       1520       1530       1540
TGACATGTGT TTCTTTCTCC ATATACCAGG TTCCCGCTTC GTATTAGTAA GATTGAAATT GAAATAAGTC
ACTGTACACA AAGAAAGAGG TATATGGTCC AAGGGCGAAG CATAATCATT CTAACTTTAA CTTTATTCAG

      1550       1560       1570       1580       1590       1600       1610
TATTGCTGGT GGATGAATTT GTCACTTTCC TTGAAACTGG TGAACCCAAA AAGTTAGACA GTGATAGGAA
ATAACGACCA CCTACTTAAA CAGTGAAAGG AACTTTGACC ACTTGGGTTT TTCAATCTGT CACTATCCTT

      1620       1630       1640       1650       1660       1670       1680
AATACTGCCA TTGTCTGTTA AGAAGTCTAT GACATTTCAA GGCAAGAATG AATATATGGA AGAAGAAACT
TTATGACGGT AACAGACAAT TCTTCAGATA CTGTAAAGTT CCGTTCTTAC TTATATACCT TCTTCTTTGA

      1690       1700       1710       1720       1730       1740       1750
TGTTTCTTCT TTACTTACAA AAAGGAAAGC CTGGAAGTGA ATGATATGGG TATAATTAAA AAAAAAAAAA
ACAAAGAAGA AATGAATGTT TTTCCTTTCG GACCTTCACT TACTATACCC ATATTAATTT TTTTTTTTTT

      1760       1770       1780       1790       1800       1810       1820
AAAACAAAAA ACCTTTACGT AACGTTTTGC TGGGAGAGAA GACTACGAAG CACATTTTCC AGGAAGTGTG
TTTTGTTTTT TGGAAATGCA TTGCAAAACG ACCCTCTCTT CTGATGCTTC GTGTAAAAGG TCCTTCACAC
```

Fig. 5B

```
      1830       1840       1850       1860       1870       1880       1890
GGCTGCAACG ATTGTGCGCT CTTAACTAAT CCTGAGTAAG GTGGCCACTT TGACAGTCTT CTCATGCTGC
CCGACGTTGC TAACACGCGA GAATTGATTA GGACTCATTC CACCGGTGAA ACTGTCAGAA GAGTACGACG

      1900       1910       1920       1930       1940       1950       1960
CTCTGCCACC TTCTCTGCCA GAAGATACCA TTTCAACTTT AACACAGCAT GATCGAAACA TACAACCAAA
GAGACGGTGG AAGAGACGGT CTTCTATGGT AAAGTTGAAA TTGTGTCGTA CTAGCTTTGT ATGTTGGTTT

      1970       1980       1990       2000       2010       2020       2030
CTTCTCCCCG ATCTGCGGCC ACTGGACTGC CCATCAGCAT GAAAATTTTT ATGTATTTAC TTACTGTTTT
GAAGAGGGGC TAGACGCCGG TGACCTGACG GGTAGTCGTA CTTTTAAAAA TACATAAATG AATGACAAAA

      2040       2050       2060       2070       2080       2090       2100
TCTTATCACC CAGATGATTG GGTCAGCACT TTTTGCTGTG TATCTTCATA GAAGGCTGGA CAAGGTAAGA
AGAATAGTGG GTCTACTAAC CCAGTCGTGA AAAACGACAC ATAGAAGTAT CTTCCGACCT GTTCCATTCT

      2110       2120       2130       2140       2150       2160       2170
TGAACCACAA GCCTTTATTA ACTAAATTTG GGGTCCTTAC TAATTCATAG GTTGGTTCTA CCCAAATGAT
ACTTGGTGTT CGGAAATAAT TGATTTAAAC CCCAGGAATG ATTAAGTATC CAACCAAGAT GGGTTTACTA

      2180       2190       2200       2210       2220       2230       2240
GGATGATGGT AGAAACCAAA TAGAAGAATG GTCTTGTGGC ATAATGTTTG TTCCCTAGTC AATGAACTCT
CCTACTACCA TCTTTGGTTT ATCTTCTTAC CAGAACACCG TATTACAAAC AAGGGATCAG TTACTTGAGA

      2250       2260       2270       2280       2290       2300       2310
CATATTCTTG TCTCTGGTTA GGATCTTGGG ATCTGGAGTC AGACTGCCTG GGCTCAAATC TTGGCTCTGC
GTATAAGAAC AGAGACCAAT CCTAGAACCC TAGACCTCAG TCTGACGGAC CCGAGTTTAG AACCGAGACG

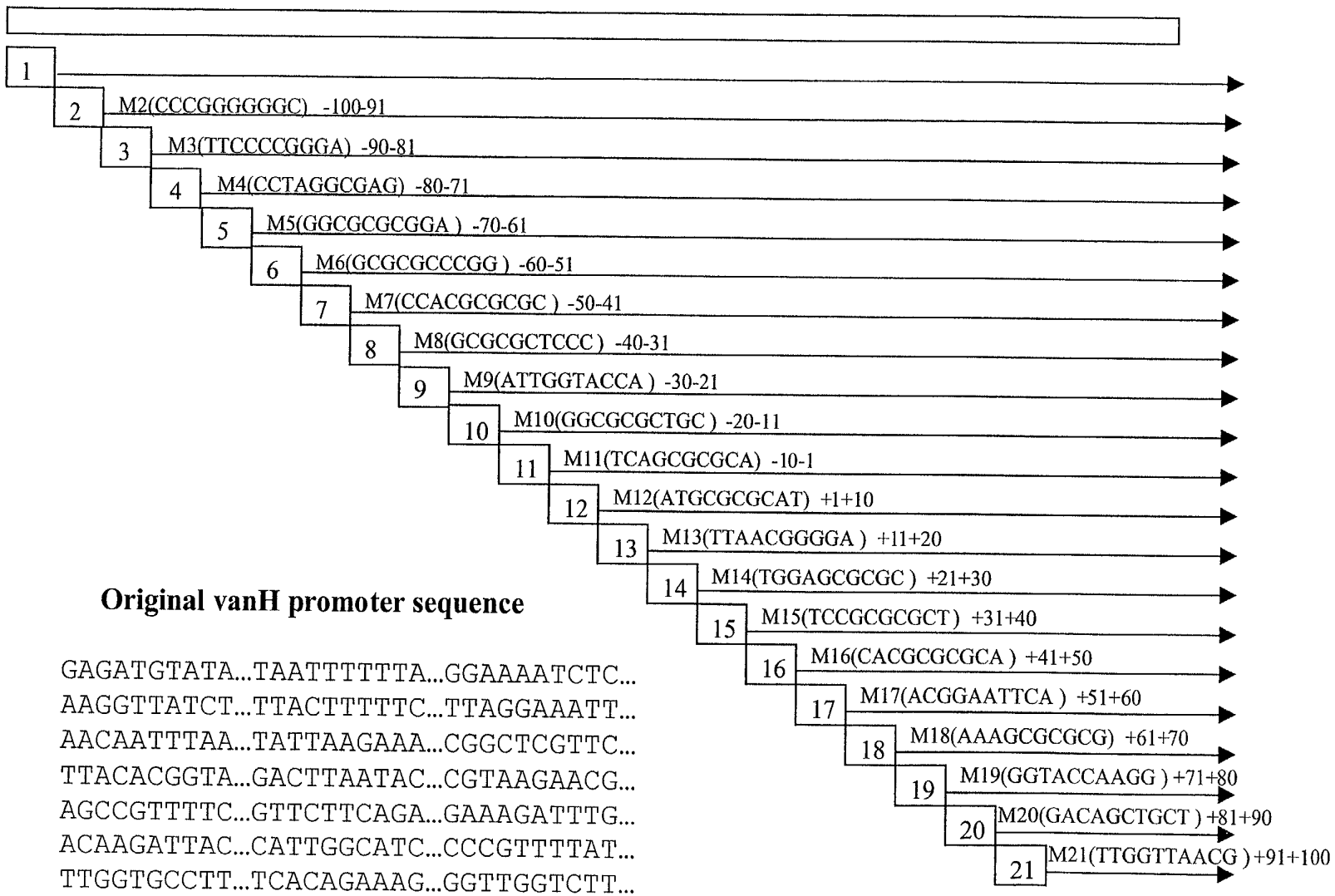
      2320       2330       2340       2350       2360       2370       2380
CCATACCATC TCTGTTATCC TGGGGCAAGT GCCTCAGTTT CCACATCTGA GAAATGGGGA TGGTAGTGGT
GGTATGGTAG AGACAATAGG ACCCCGTTCA CGGAGTCAAA GGTGTAGACT CTTTACCCCT ACCATCACCA

      2390
GTCCATTTCA TAGAT
CAGGTAAAGT ATCTA
```

Fig. 5C

GAGATGTATATAATTTTTTAGGAAAATCTCAAGGTTATCTTTACTTTTTCTTA
GGAAATTAACAATTTAATATTAAGAAACGGCTCGTTCTTACACGGTAGACTTA
ATACCGTAAGAACGAGCCGTTTTCGTTCTTCAGAGAAAGATTTGACAAGATTA
CCATTGGCATCCCCGTTTTATTTGGTGCCTTTCACAGAAAGGGTTGGTCTTAA
TT

Fig. 6



Original vanH promoter sequence

GAGATGTATA...TAATTTTTTA...GGAAAATCTC...
AAGGTTATCT...TTACTTTTTC...TTAGGAAATT...
AACAATTTAA...TATTAAGAAA...CGGCTCGTTC...
TTACACGGTA...GACTTAATAC...CGTAAGAACG...
AGCCGTTTTC...GTTCTTCAGA...GAAAGATTTG...
ACAAGATTAC...CATTGGCATC...CCCGTTTTAT...
TTGGTGCCTT...TCACAGAAAG...GGTTGGTCTT...

Fig. 7

TCTAGAAAAT AATTCCCAAT ATTGAATCCC AAAGAATTCA ACATTTGGGC TGTCGTTTGA 61
AAGATAAGTT GAATTTGGTC ATGAAGGAAG AGAGGGGGGA TACAATTTCA GTAAAAGGTA 121
ACAGCAAGGT CCAAAGACAG TCAGGTCTTC AGTAGTATGG AGTATATTCA GAGGGAGCCA 181
AGATGTCTGA TGTGAACTAA AAAGATTGGT GGTTGGTAGG AGGAAGAGGT GTGAGAAGAG 241
GCTGTAAAGA AAAATTGAAA CTTGATTGTG ATGGACTTTA AAGGCTAGGC TATGGGACTT 301
GGACATGAAT CTGCAGGCCA GTGTTTGCAG ACTGGCGCCC ATAACTGTCT ATCACAGCAA 361
CACAGACATG TGTTGTTTGG CCTGCAGAGG TTTGGCCTGC ATGATGATTT TAAACCATCT 421
GAATTAGTAG CCATCATTTT CAAAAATCAA GAGATGCCAC ATTAAAATAT GGAATGCTGC 481
TGTTCTTGAA AATAATGAAA CATCTGGAAC ATTGAGGCCA CATTCCTGAC TGACAGCAAT 541
CAGTTGGAGC TGCGTAGTGA CTGCCCACTT TACATGGGGC ATCTGATCCC TAGTCGATTA 601
CAGCTGCCAC CACTTCCCTT TATCTCTCTA ATACCAAGCT CTTTTCACTC ATTTTTGTTA 661
CTTAAGAGAT ATTTGGGTTT GAAACCTCTG ATGCAGGTAA TTGAGGGTTA TAGAGCAGAG 721
GACAGATGCT ATCAGAGTTG TCTTTTAAGA AAGAACCCTC TGTTCTTCAT TTTGTTGAAG 781
ATAGCCTGGA AGAGGGCAGC CAGGGGAGAA GTTAGGGCTG GAGCTATGAG AAAGCATAAG 841
ATGAGATGAT GGCTTCAACA TTGAGGACAG AAAGAATATT GAGATGAGAA AGTAGTCCAT 901
ATAAGCATCT ATGCAAAGGA AATAGCAGAT GTCCTCAAAT CAGCAGAGGC AACAACTCTG 961
AAAGTTTATT CATAAGCCCC TCTTTTCATC TCCAATCCAG TTCAAATGTA ATTATTTAAA 1021
TTGTTCTTCA CTCTCCTTCC TGGATCATGA ATGAGCTCCT TAAATGCAGG GTCCACAGTG 1081
TCCTATTCAT CAGTGAATTC CAAGTGCCTA GCACAGAGCC TGGCAAATAG TAAATGCTTA 1141
ACAAATATTC GTTCAGTGCA TGAATTGGAG TGATTCTCTA CTTTGCCTCA TAAGTTGAAA 1201
AAAGGTTTAT TACATACCTA AATATGCTGA AATCACAGGG CATTTGGCAA CCCCCCAAAA 1261
CCAAAACTCC CAGTTTGGAA ACAGAATTTT AATTCTGTGA AAATAAAATC CATTCATTTA 1321
TTCAAAAAAT ATTTATTAAA CAATGACCAT GTCCACACCA GGCTGAGTCC TAAGGATTCA 1381
ATGATGAACA AAAACCAACA TGATTCCTGC TCTTAGGAAA CATACAGTTC AGTGAGGAAA 1441
ACAGATTGTG AGAAGTCCTC CAACAAATAC TGGGTGCTAT TAAAATATAT TAAAAGGTGA 1501
GTGGGTGAGG GACTTGAGCT AGCCTAGGTG GTTCAGGAAG TCTTCCTGGA TGTGCTGATA 1561
TGCATAGGCA TTAACTAGAT AAATAGAGAG AAGGATGAAC CAACATTGCA GGTAGAGGGA 1621
ACAGAATATG CAAAGGCAGG AAGGATTATG GAGTCGTTGG AGGACCTGAA TAAAGGCCCA 1681
GTGTAAGTGG ATCTCAGAAA ACAGGAGGAA AGGTGTATGA GATGAGATCA GAGAGGCAGA 1741
TCATGTGGGG TATGGTTAAT GTTTTGGACT TTTCTATTAA GAGCAATGGG GAGACAGTGA 1801
CAGGACTTAA ACGGGGAAAT AATATGACCA GATTAAACTT TCTAAAAAAC CCTCTATGCA 1861
AATATATATT GAGAGTTAAT TATTGACAAA GATTCAAAGG CAACAAAGTG GAGAGAGAAT 1921
AGTATTTTCA AAAAATGGTG CCAAAACAAT AGGACATCTA TATTAAAAGT TGGGTATCTG 1981
TCTACAAAAC TTAATTCAAA ATGGATCACA GACCTAAATG TAAAACTGAA AGCTATACAA 2041
CTTCTGGAAG GAAAACACAG ATGGGAATCT GTGTGATCTT GAGTTTGAAA ATGATTTATT 2101
ATATCTGACA CCATAATCCG TAAGTTAACA TAATTCATAA GTGAACAAAG TGATGAACTG 2161
GACTTCATCA GAATTTAAAA TGTTTGTGCT TCAAAAGACA CTGGTATGAT AATGAAGACA 2221
AACTACAGAT AAGATATTGT TGAATCATAT TTCTGATAAA GGAATTGTGG CTCAGAATAC 2281
ATAACTCTAA ACCCCCATAA TAAATTACAA GTAGCCCAAT TAAAAAAAAA AAAAGAGAAA 2341
AAATTTACAG TCTTCATCAA AGAAAGTATC AATTGTAAAA TAAGCACATG AAAAATGCTC 2401
TGCATCTTTA TTCATGGGGG GATGAAATAA AAATTAAATG GGAAAGACAC CTCTAATTAG 2461
AATACTAAAA TTAAAAAGAC TGACCATACC AAGTATTGGT GAAGTGGAAA TGTAAAATGA 2521
TACAATCAAC TTAGGTAGAT GATTTGGAAG TTTCTTACAA AAGTAGGTGT ATACCTACCC 2581
TGTGACTCAC CCATTCCATG GCTAAGTATT TACCTGAGAG AAATGAAAGA ATACATCCAT 2641
ACAAAGATGT TTATACAAAT ATTTATAGCA GTTTTATTTG TAGTAGCCCC AAACTGAAAA 2701
GAACCCAAAT GTCCATCAAA AGTGAATGGA TAAACAAAGC GTGGTACAGC AATGCAATAG 2761
AATACTACTT AGCAATAAAG AAGAATGAGC TAGTGATATA CATAACAGCT TAAATGTACA 2821
TCAAAGGCAT TGTGCTCAGT GAAAGATGCA AGTAAAAAAA AAAAAGAGTA CATGCTGTAT 2881
AGTTCCATTG ACATAAAACT CTGGAAAGTG AAAAACAGTC TATACTGACA GAAAGCAGAT 2941
CATTGGTTGC CTGAGGAGGA GGAGTATAGG AGAGGTGGAG GGAAAATGTA CAAAGTGGCA 3001
CAATAAAAAC TTTTGGAATC ATAGATATAT TCACTATCTT GATTGAGTGA TGATTTCATG 3061

Fig. 8A

```
AGTGCACGTG CGTGTGTCAA AAATGATCAA TTTATGCAAC TTTAAATATG TGCAGTTTAT 3121
TGTATATATC AATTATACCT CAGTACGGCT ATTAAAAAGA AACCCTCTGG CTGCACAATG 3181
CAGAACTGAT TCTAGGAAAG AGTGGAGGGA GGATGACCAT TTACAGTGCT CCAGGTGGAA 3241
GAGAACGGTG CCTTCTGGAA GTGAACTAGG TTGGCAACAA CAGAGATGAA ATAAATGGGC 3301
AGATGTGTGA GATACTTAGG AAATAAAACC CGATGGTCAC CATTTTCCAA AGGTCAGCTC 3361
ATCCTGGCTT TCCAGAGCAA AGAGCTAGGG AAGACTTTAT TAATAAATCC CTCTTGAAGT 3421
TGCAGAGGAA GCTTATAGCA GAAACTTACT CTCAACCTGA CTAATCTGAG AGAACACCTC 3481
TGGTTCCATT TGATTACTAA AAAACTGCAA AGAACAGGAG GAGAAAGAAG AAGAAAGCTG 3541
GTACAAACAG TGAACTTATA TAATATTAAT CAATAATTGT CTCTTGTTCT TAAAAGCAAT 3601
GGGAAGAAAA TGAGATTTGA GCTGGAAGAT CAGAGTTCAA AATCCAAATA AAGTATATGG 3661
CCCTAATATG CTTATAGTAG TTAACCTTTC CTGATAATGA TATAATTGTT GACAGCACCA 3721
TCTTTAAAAT AAAATAACAT AGTAATCCTT CAGATTTGTA GAAGATCTTT CCTGTTTACA 3781
AGTTTGTTCT ATACACATTA TGTCTTTTAA ATGACACACT AGCCTTCTGA GGGTAACTTA 3841
TATTGGCAAC AGTTTTCAGA TGTGGAAACT GTGAAGACAA TGTTGGTGAT GTGGAAGCAA 3901
CATAAACTTT GGAGTCTTTC AGACCCAGGT TTGAATGTCA GACTGCTTTT TATTCAGAGT 3961
AACTTCAGAG CATTATTTCT CACCTTAATT TTTTTTCAGG CCTCTTTGTG TCTATGTGTC 4021
CTCTTCACTC CTGTCCATTG TTTCTTCAGT GATTTTTGCC ACCTTCCTTC ACTGTTAGTG 4081
TGTAGACACA TAGTTCTCCT GGCTCTGAGA GCCTATGTTA ATTCCATTCT ACCATCCTGC 4141
CACGGCCCAC TCAATTCCTA TTGAGCAATG CTAGTTGAAA GTTGTGGTGG GATTAAATGT 4201
TGCAATGAGT ATTCAAATGA GGTTGAAGTA TCTACGCATT CTACTTACAT ATGGTGAGGT 4261
ATATTCAAGG AAGCTGTAGC CATTAAAATC TCAGGAAATA ATTTTTCACC TCCTCAGGTG 4321
AAAGGGTCTT CAGGCCTTTG TGTTCTGGAA GGTTCATTTA TAGCCATTTC CCAAATGACA 4381
ATGCGATTGA TGAGTCTAGA GTCTAGCTCA AATAGCAATG GACTGGAAGA CTAGTTTAGG 4441
TTTTACTAAT GTGGAACATA GAACAAATTA TGTCCTTGTT TCAGCCTGTT CATCTGTGAA 4501
ATAGAGCCTA TCATATCCAG TCTTCCTTGC CTTTAGGTTT GAGTTACCTT CTTTGGTCAA 4561
GGTAAGTAAA TGCCTATGAT GTTTGGCTGT GCACAAGATA AAGCTACAAC AAAGCTACAA 4621
CCCATCTTTT CTCTGTAGAA GACTCAAAAA GCAAAAGAGA CCCAGGAAAA TCTCGGAATG 4681
ACTTTTGGAA CAGAGAGCCT CCCCAGAATC AGAAGTCAAG GAATTTAAAC ATAGGGAAGG 4741
CCCAGGTCTC TACTGACATA AAGGAAAGAT GTTTTCTTAT AGGTTTCACG TTTACATTTT 4801
CTCTCTCTTG ATCCCATTCC CACTTGCATC TGCCACCTTT ACACAGGGCT TATGGGACCT 4861
CCTCCACAAA AGAGCAGTTG CAGTAACCCA CATCATCCTC TACGCCCTGG CTGTCCATCA 4921
AGAGGCGAAA AGCAGCCCTA TATAGGTTCT ATCCTTGGAT AGTTCCAGTT GTAAAGTTTA 4981
AAATATGCGA AGGCAACTTG GAAAAGCAAG CGGCTGCATA CAAAGCAAAC GTTTACAGAG 5041
CTCTGGACAA AATTGAGCGC CTATGTGTAC ATGGCAAGTG TTTTTAGTGT TTGTGTGTTT 5101
ACCTGCTTGT CTGGGTGATT TTGCCTTTGA GAGTCTGGAG AGTAGAAGTA CTGGTTAAAG 5161
GAACTTCCAG ACAGGAAGAA GGCAGAGAAG AGGGTAGAAA TGACTCTGAT TCTTGGGGCT 5221
GAGGGTTCCT AGAGCAAATG GCACAATGCC ACGAGGCCCG ATCTATCCCT ATGACGGAAT 5281
CTAAGGTTTC AGCAAGTATC TGCTGGCTTG GTCATGGCTT GCTCCTCAGT TTGTAGGAGA 5341
CTCTCCCACT CTCCCATCTG CGCGCTCTTA TCAGTCCTGA AAAGAACCCC TGGCAGCCAG 5401
GAGCAGGTAT TCCTATCGTC CTTTTCCTCC CTCCCTCGCC CCACCCTGTT GGTTTTTTAG 5461
ATTGGGCTTT GGAACCAAAT TTCCTGAGTG CTGGCCTCCA GGAAATCTGG AGCCCTGGCG 5521
CCTAAACCTT GGTTTAGGAA ACCAGGAGCT ATTCAGGAAG CAGGGGTCCT CCAGGGCTAG 5581
AGCTAGCCTC TCCTGCCCTC GCCCACGCTG CGCCAGCACT TGTTTCTCCA AAGCCACTAG 5641
GCAGGCGTTA GCGCGCGGTG AGGGGAGGGG AGAAAAGGAA AGGGGAGGGG AGGGAAAAGG 5701
AGGTGGGAAG GCAAGGAGGC CGGCCCGGTG GGGGCGGGAC CCGACTCGCA AACTGTTGCA 5761
TTTGCTCTCC ACCTCCCAGC GCCCCCTCCG AGATCCCGGG GAGCCAGCTT GCTGGGAGAG 5821
CGGGACGGTC CGGAGCAAGC CCACAGGCAG AGGAGGCGAC AGAGGGAAAA AGGGCCGAGC 5881
TAGCCGCTCC AGTGCTGTAC AGGAGCCGAA GGGACGCACC ACGCCAGCCC CAGCCCGGCT 5941
CCAGCGACAG CCAACGCCTC TTGCAGCGCG GCGGCTTCGA AGCCGCCGCC CGGAGCTGCC 6001
CTTTCCTCTT CGGTGAAGTT TTTAAAAGCT GCTAAAGACT CGGAGGAAGC AAGGAAAGTG 6061
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Fig. 8B

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CCTGGTAGGA CTGACGGCTG CCTTTGTCCT CCTCCTCTCC ACCCCGCCTC CCCCCACCCT 6121
GCCTTCCCCC CCTCCCCCGT CTTCTCTCCC GCAGCTGCCT CAGTCGGCTA CTCTCAGCCA 6181
ACCCCCCTCA CCACCCTTCT CCCCACCCGC CCCCCCGCCC CCGTCGCCCA GCGCTGCCAG 6241
CCCGAGTTTG CAGAGAGGTA ACTCCCTTTG GCTGCGAGCG GGCGAGCTAG CTGCACATTG 6301
CAAAGAAGGC TCTTAGGAGC CAGGCGACTG GGGAGCGGCT TCAGCACTGC AGCCACGACC 6361
CGCCTGGTTA GGCTGCACGC GGAGAGAACC CTCTGTTTTC CCCCACTCTC TCTCCACCTC 6421
CTCCTGCCTT CCCCACCCCG AGTGCGGAGC CAGAGATCAA AAGATGAAAA GGCAGTCAGG 6481
TCTTCAGTAG CCAAAAAACA AAACAAACAA AAACAAAAAA CAAGAAATAA AAGAAAAAGA 6541
TAATAACTCA GTTCTTATTT GCACCTACTT CAGTGGACAC TGAATTTGGA AGGTGGAGGA 6601
TTTTGTTTTT TTCTTTTAAG ATCTGGGCAT CTTTTGAATC TACCCTTCAA GTATTAAGAG 6661
ACAGACTGTG AGCCTAGCAG GGCAGATCTT GTCCACCGTG TGTCTTCTTC TGCACGAGAC 6721
TTTGAGGCTG TCAGAGCGCT TTTTGCGTGG TTGCTCCCGC AAGTTTCCTT CTCTGGAGCT 6781
TCCCGCAGGT GGGCAGCTAG CTGCAGCGAC TACCGCATCA TCACAGCCTG TTGAACTCTT 6841
CTGAGCAAGA GAAGGGGAGG CGGGGTAAGG GAAGTAGGTG GAAGATTCAG CCAAGCTCAA 6901
GGATG
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Fig. 8C

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                    CA GGCCCCACAA AACCTAGATC TGCCCCAGTA TAACTAAATC 1501
TGGGACCATT TATTGAGCAA TTATTATGTG CCAAGTATTG CGCTGAGTGC TTCCAGAGCA 1561
TTATCTCCTT TAACCCCAGC ATAGTATGTC AGATGCTGTT TTACAGATGA GCCAACTGAG 1621
ACCAGAGATG CTCAGTCACT TGCCCAAGGT GACATGACTG ATATGGAATA GAGTCAAGAT 1681
TTTTTTTTTT TTTTTTGACA CGGAGTCTCA CTCTGTCTCC CAGGCTGGAG TGCAGAGGCG 1741
CAATCTCAGC TCACTGCAAG CTCTGCCTCC CAGGTTCACG CATTCTCCTG CCTCAGCCTC 1801
CTGAGTAGCT GGGACTACAG GCACCCGCCA CCACACCTGG CTAATTTTTT GTATTTTTAG 1861
CAGAGACAGG GTTTCACCGT GTTAGCCAGG ATGGTCTCGA TCTCCTGACC TCGTGATCTG 1921
CCTGCCTCGG CCTCCCAAAG TGATGGAATT ACAGGTGTGA GCCACCGCGA CTGGCCAGAT 1981
TCAAGATTTG AACCCAGGTC CTCTTGGTCC CAGAGGCCCC TGTTTCTCAA CTCCCTAGCA 2041
TGCATACGCA CCTGTCCCTC TAGAGGTGCC TGCTTAAGTG TGCTCAGCAC ATGGAAGCAA 2101
GTTAGAAATG CTAGGTATAC CTGTAAAGAG GTGTGGGAGA TGGGGGGGAG GGAAGAGAGA 2161
AAGAGATGCT GGTGTCCTTC ATTCTCCAGT CCCTGATAGG TGCCTTTGAT CCCTTCTTGA 2221
CCAGTATAGC TGCATTCTTG GCTGGGGCAT TCCAACTAGA ACTGCCAAAT TTAGCACATA 2281
AAAATAAGGA GGCCCAGTTA AATTTGAATT TCAGATAAAC AATGAATAAT TTGTTAGTAT 2341
AAATATGTCC CATGCAATAT CTTGTTGAAA TTAAAAAAAA AAAAAAAAGT CTTCCTTCCA 2401
TCCCCACCCC TACCACTAGG CCTAAGGAAT AGGGTCAGGG GCTCCAAATA GAATGTGGTT 2461
GAGAAGTGGA ATTAAGCAGG CTAATAGAAG GCAAGGGGCA AAGAAGAAAC CTTGAATGCA 2521
TTGGGTGCTG GGTGCCTCCT TAAATAAGCA AGAAGGGTGC ATTTTGAAGA ATTGAGATAG 2581
AAGTCTTTTT GGGCTGGGTG CAGTTGCTCG TGGTTGTAAT TCCAGCACTT TGGGAGGCTG 2641
AGGCGGGAGG ATCACCTGAG CTTGGGAGTT CAAGACCAGC CTCACCAACG TGGAGAAACC 2701
CTGTCTTTAC TAAAAATACA AAAAATTCAG CTGGTCATGG TGGCACATGC CTGTAATCCC 2761
AGCTGCTCGG GAGGCTGAGG CAGGAGAATC ACTTGAACCA GGGAGGCAGA GGTTGTGGTG 2821
AGCAGAGATC GCGCCATTGC TCTCCAGCCT GGGCAACAAG AGCAAAAGTT CGTTTAAAAA 2881
AAAAAAAAAG TCCTTTCGAT GTGACTGTCT CCTCCCAAAT TTGTAGACCC TCTTAAGATC 2941
ATGCTTTTCA GATACTTCAA AGATTCCAGA AGATATGCCC CGGGGGTCCT GGAAGCCACA 3001
AGGTAAACAC AACACATCCC CCTCCTTGAC TATCAATTTT ACTAGAGGAT GTGGTGGGAA 3061
AACCATTATT TGATATTAAA ACAATAGGCT TGGGATGGAG TAGGATGCAA GCTCCCCAGG 3121
AAGTTAGATA ACTGAGACTT AAAGGGTGTT AAGAGTGGCA GCCTAGGGAA ATTTATCCCG 3181
GACTCCGGGG GAGGGGGCAG AGTCACCAGC CTCTGCATTT AGGGATTCTC CGAGGAAAAG 3241
TGTGAGAACG GCTGCAGGCA ACCCAGGCGT CCCGGCGCTA GGAGGGACGA CCCAGGCCTG 3301
CGCGAAGAGA GGGAGAAAGT GAAGCTGGGA GTTGCCGACT CCCAGACTTC GTTGGAATGC 3361
AGTTGGAGGG GGCGAGCTGG GAGCGCGCTT GCTCCCAATC ACCGGAGAAG GAGGAGGTGG 3421
AGGAGGAGGG CTGCTTGAGG AAGTATAAGA ATGAAGTTGT GAAGCTGAGA TTCCCCTCCA 3481
TTGGGACCGG AGAAACCAGG GGAGCCCCCC GGGCAGCCGC GCGCCCCTTC CCACGGGGCC 3541
CTTTACTGCG CCGCGCGCCC GGCCCCCACC CCTCGCAGCA CCCCGCGCCC CGCGCCCTCC 3601
CAGCCGGGTC CAGCCGGAGC CATGG
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Fig. 9